



**DEPARTMENT OF TRANSPORTATION**

**Federal Aviation Administration**

**14 CFR Part 39**

**[Docket No. FAA-2021-0257; Project Identifier MCAI-2020-00712-E; Amendment 39-21772; AD 2021-21-12]**

**RIN 2120-AA64**

**Airworthiness Directives; Rolls-Royce Deutschland Ltd & Co KG (Type Certificate previously held by Rolls-Royce Deutschland GmbH, formerly BMW Rolls-Royce GmbH) Turbofan Engines**

**AGENCY:** Federal Aviation Administration (FAA), DOT.

**ACTION:** Final rule.

**SUMMARY:** The FAA is adopting a new airworthiness directive (AD) for certain Rolls-Royce Deutschland Ltd & Co KG (RRD) BR700-710A2-20 model turbofan engines. This AD was prompted by flight data obtained from airplanes equipped with certain Rockwell Collins avionics and auto-throttle systems that demonstrated significant oscillation of the engine rotor revolution speed during flight. This AD requires initial and repetitive recalculation of the consumed and remaining service life of certain life-limited parts (LLPs). This AD also requires removal of an LLP prior to its approved life limit or within 90 days after the effective date of this AD, whichever occurs later. The FAA is issuing this AD to address the unsafe condition on these products.

**DATES:** This AD is effective [INSERT DATE 35 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

The Director of the Federal Register approved the incorporation by reference of a certain publication listed in this AD as of [INSERT DATE 35 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

**ADDRESSES:** For service information identified in this final rule, contact Rolls-Royce Deutschland Ltd & Co KG, Eschenweg 11, Dahlewitz, 15827 Blankenfelde-Mahlow, Germany; phone: +49 (0) 33 7086-4040; website: <https://www.rolls-royce.com/contact-us.aspx>. You may view this service information at the FAA, Airworthiness Products

Section, Operational Safety Branch, 1200 District Avenue, Burlington, MA 01803. For information on the availability of this material at the FAA, call (781) 238-7759. It is also available at <https://www.regulations.gov> by searching for and locating Docket No. FAA-2021-0257.

### **Examining the AD Docket**

You may examine the AD docket at <https://www.regulations.gov> by searching for and locating Docket No. FAA-2021-0257; or in person at Docket Operations between 9 a.m. and 5 p.m., Monday through Friday, except Federal holidays. The AD docket contains this final rule, the mandatory continuing airworthiness information (MCAI), any comments received, and other information. The address for Docket Operations is U.S. Department of Transportation, Docket Operations, M-30, West Building Ground Floor, Room W12-140, 1200 New Jersey Avenue SE, Washington, DC 20590.

**FOR FURTHER INFORMATION CONTACT:** Wego Wang, Aviation Safety Engineer, ECO Branch, FAA, 1200 District Avenue, Burlington, MA 01803; phone: (781) 238-7134; fax: (781) 238-7199; email: [Wego.Wang@faa.gov](mailto:Wego.Wang@faa.gov).

### **SUPPLEMENTARY INFORMATION:**

#### **Background**

The FAA issued a notice of proposed rulemaking (NPRM) to amend 14 CFR part 39 by adding an AD that would apply to certain RRD BR700-710A2-20 model turboprop engines. The NPRM published in the *Federal Register* on April 2, 2021 (86 FR 17326). The NPRM was prompted by flight data obtained from airplanes equipped with certain Rockwell Collins avionics and auto-throttle systems that demonstrated significant oscillation of the engine rotor revolution speed during flight. In the NPRM, the FAA proposed to require initial and repetitive recalculation of the consumed and remaining service life of certain LLPs. The NPRM also proposed to require removal of an LLP prior to its approved life limit or within 90 days after the effective date of this AD, whichever occurs later. The FAA is issuing this AD to address the unsafe condition on these products.

The European Union Aviation Safety Agency (EASA), which is the Technical Agent for the Member States of the European Community, has issued EASA AD 2018-

0268, dated December 11, 2018 and corrected on February 20, 2019 (referred to after this as “the MCAI”), to address the unsafe condition on these products. The MCAI states:

Flight data obtained from aeroplanes equipped with certain Rockwell Collins avionics and auto-throttle system demonstrated significant oscillation of the engine rotor revolution speed during cruise. Analysis indicates that this affects the service life of the affected LLP.

This condition, if not corrected, may lead to failure of an affected LLP, possibly resulting in release of high-energy debris, with consequent damage to, and/or reduced control of, the aeroplane.

To address this potentially unsafe condition, RRD issued the NMSB, providing instructions to recalculate the consumed and remaining service life of the affected LLP.

For the reasons described above, this [EASA] AD requires repetitive recalculation of the service life (consumed and remaining) of each affected LLP and, depending on the results, replacement of each affected LLP before exceeding the life limit, taking the re-calculated life consumption into account.

You may obtain further information by examining the MCAI in the AD docket at <https://www.regulations.gov> by searching for and locating Docket No. FAA-2021-0257.

## **Discussion of Final Airworthiness Directive**

### **Comments**

The FAA received comments from one commenter, NetJets Aviation (NJA). The following presents the comments received on the NPRM and the FAA’s response to each comment.

### **Request to Confirm Compliance with Previous Action**

NJA asked if they are in compliance with this AD if they performed the required actions using Bombardier Service Bulletin (SB) 700-34-5021 or Bombardier SB 700-34-6021, revisions earlier than Revision 3, dated January 5, 2018, as applicable. NJA reasoned that paragraph (c), Applicability, of the proposed AD references only Revision

3 of Bombardier SB 700-34-5021 and Bombardier SB 700-34-6021 (Bombardier SBs). NJA states that it performed the required actions using Revision 2 of the Bombardier SBs before the effective date of this AD. NJA also referenced language from Revision 3 of the Bombardier SBs that indicates no further action is necessary if operators performed the action using earlier revisions of the Bombardier SBs.

The FAA notes that NJA would be in compliance with the required actions of this AD if they performed those actions using the earlier versions of the Bombardier SBs to meet the requirements of this AD. The FAA updated paragraph (h), Credit for Previous Actions, of this AD to give credit for using earlier revisions of the Bombardier SBs if the actions were performed before the effective date of this AD.

#### **Request to Confirm Compliance for Simultaneous Actions**

NJA asked if they would be in compliance with the required actions of this AD, based on paragraph (h), Credit for Previous Actions, if they complied with the Bombardier SBs and RRD Alert Non-Modification Service Bulletin SB-BR700-72-A900584, Revision 2, dated November 22, 2017 (the NMSB), at the same time before the fleet accumulated 500 flight cycles. NJA indicated that the Accomplishment Instructions, paragraphs 3.A.(1) and (2), of the NMSB apply only to the low-pressure compressor (LPC) disk whereas this AD applies to all LLPs.

The FAA notes that NJA would be in compliance with the replacement of the LPC disk required by paragraph (g)(3) of this AD if they performed the action before the effective date of this AD. Paragraph (f) of this AD mandates compliance with this AD within the compliance times specified, unless already done.

#### **Update to Service Information**

The FAA determined the need to incorporate the latest service information in this AD. The FAA revised the reference to Bombardier SB 700-34-5021 in paragraph (c) of this AD from Revision 03, dated January 5, 2018, to Revision 04, dated February 11, 2021, or earlier revision, and Bombardier SB 700-34-6021 in paragraph (c) of this AD from Revision 03, dated January 5, 2018, to Revision 04, dated February 11, 2021, or earlier revision. This change does not change the number of affected engines that the

FAA estimated in the NPRM and imposes no additional burden on operators who are required to comply with this AD.

### **Conclusion**

The FAA reviewed the relevant data, considered any comments received, and determined that air safety requires adopting this AD as proposed. Accordingly, the FAA is issuing this AD to address the unsafe condition on these products. Except for minor editorial changes, and any other changes described previously, this AD is adopted as proposed in the NPRM. None of the changes will increase the economic burden on any operator.

### **Related Service Information under 1 CFR Part 51**

The FAA reviewed RRD Alert Non-Modification Service Bulletin SB-BR700-72-A900584, Revision 2, dated November 22, 2017. The NMSB describes procedures for amending flight cycle counting requirements for affected LLPs on RRD BR700-710A2-20 model turbofan engines. This service information is reasonably available because the interested parties have access to it through their normal course of business or by the means identified in ADDRESSES.

### **Other Related Service Information**

The FAA reviewed Bombardier SB 700-34-5021, Revision 04, dated February 11, 2021, and Bombardier SB 700-34-6021, Revision 04, dated February 11, 2021. These SBs describe procedures for the implementation of the Global Vision Flight Deck Version 5 (V5) software load on Bombardier Inc. Model BD-700-1A11 and BD-700-1A10 airplanes, respectively.

### **Costs of Compliance**

The FAA estimates that this AD affects 284 engines installed on airplanes of U.S. registry.

The FAA estimates the following costs to comply with this AD:

#### **Estimated costs**

<b>Action</b>	<b>Labor Cost</b>	<b>Parts Cost</b>	<b>Cost per product</b>	<b>Cost on U.S. operators</b>
Recalculate	20 work-hours	\$0	\$1,700	\$482,800

service life for affected LLPs	x \$85 per hour = \$85			
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### **Authority for This Rulemaking**

Title 49 of the United States Code specifies the FAA’s authority to issue rules on aviation safety. Subtitle I, section 106, describes the authority of the FAA Administrator. Subtitle VII: Aviation Programs, describes in more detail the scope of the Agency’s authority.

The FAA is issuing this rulemaking under the authority described in Subtitle VII, Part A, Subpart III, Section 44701: General requirements. Under that section, Congress charges the FAA with promoting safe flight of civil aircraft in air commerce by prescribing regulations for practices, methods, and procedures the Administrator finds necessary for safety in air commerce. This regulation is within the scope of that authority because it addresses an unsafe condition that is likely to exist or develop on products identified in this rulemaking action.

### **Regulatory Findings**

This AD will not have federalism implications under Executive Order 13132. This AD will not have a substantial direct effect on the States, on the relationship between the national government and the States, or on the distribution of power and responsibilities among the various levels of government.

For the reasons discussed above, I certify that this AD:

- (1) Is not a “significant regulatory action” under Executive Order 12866,
- (2) Will not affect intrastate aviation in Alaska, and
- (3) Will not have a significant economic impact, positive or negative, on a substantial number of small entities under the criteria of the Regulatory Flexibility Act.

### **List of Subjects in 14 CFR Part 39**

Air transportation, Aircraft, Aviation safety, Incorporation by reference, Safety.

### **The Amendment**

Accordingly, under the authority delegated to me by the Administrator, the FAA amends 14 CFR part 39 as follows:

## **PART 39 - AIRWORTHINESS DIRECTIVES**

1. The authority citation for part 39 continues to read as follows:

Authority: 49 U.S.C. 106(g), 40113, 44701.

### **§ 39.13 [Amended]**

2. The FAA amends § 39.13 by adding the following new airworthiness directive:

**2021-21-12 Rolls-Royce Deutschland Ltd & Co KG (Type Certificate previously held by Rolls-Royce Deutschland GmbH, formerly BMW Rolls-Royce GmbH):**

Amendment 39-21772; Docket No. FAA-2021-0257; Project Identifier MCAI-2020-00712-E.

#### **(a) Effective Date**

This airworthiness directive (AD) is effective [INSERT DATE 35 DAYS AFTER DATE OF PUBLICATION IN THE FEDERAL REGISTER].

#### **(b) Affected ADs**

None.

#### **(c) Applicability**

This AD applies to Rolls-Royce Deutschland Ltd & Co KG (Type Certificate previously held by Rolls-Royce Deutschland GmbH, formerly BMW Rolls-Royce GmbH) (RRD) BR700-710A2-20 model turbofan engines:

(1) Installed and operated on a Bombardier Model BD-700-1A10 and BD-700-1A11 airplane, with serial number 9381, 9386, 9401, or 9432 to 9786, inclusive, that have not incorporated Bombardier Service Bulletin (SB) 700-34-5021, Revision 04, dated February 11, 2021, or earlier revision, or Bombardier SB 700-34-6021, Revision 04, dated February 11, 2021, or earlier revision, as applicable, referred to after this as a “pre-mod airplane,” or

(2) Installed and operated on a pre-mod airplane at any time after January 1, 2017.

#### **(d) Subject**

Joint Aircraft System Component (JASC) Code 7230, Turbine Engine Compressor Section.

**(e) Unsafe Condition**

This AD was prompted by flight data obtained from airplanes equipped with certain Rockwell Collins avionics and auto-throttle systems which demonstrated significant oscillation of the engine rotor revolution speed during flight. The FAA is issuing this AD to prevent failure of an affected life-limited part (LLP). The unsafe condition, if not addressed, could result in uncontained release of high-energy debris, damage to the engine, and damage to the airplane.

**(f) Compliance**

Comply with this AD within the compliance times specified, unless already done.

**(g) Required Actions**

(1) Within 90 days after the effective date of this AD, recalculate the consumed and remaining service life of each affected LLP using Accomplishment Instructions, paragraph 3.D., of RRD Alert Non-Modification Service Bulletin (NMSB) SB-BR700-72-A900584, Revision 2, dated November 22, 2017 (the NMSB).

(2) For engines installed and operated on a pre-mod airplane, after performing the initial recalculations required by paragraph (g)(1) of this AD, for each flight, calculate the consumed and remaining service life of each affected LLP using paragraph 3.D. of the Accomplishment Instructions of the NMSB.

(3) Remove each affected LLP prior to exceeding its approved life limit or within 90 days after the effective date of this AD, whichever occurs later.

**(h) Credit for Previous Actions**

You may take credit for the recalculation of the consumed and remaining service life of each LLP required by paragraph (g)(1) of this AD if the action was performed before the effective date of this AD using RRD Alert NMSB SB-BR700-72-A900584, Revision 1, dated October 5, 2017, or original issue, dated January 31, 2017.

**(i) Definition**

For the purpose of this AD, an affected LLP is: a low-pressure compressor (LPC) disk, LPC fan blade, fan shaft, low-pressure turbine (LPT) stage 1 disk, LPT stage 2 disk, LPT rotor shaft and annulus filler, high-pressure compressor (HPC) stage 1-6 rotor disk, HPC stage 7-10 rotor disk, curvic ring, high-pressure turbine (HPT) stage 1 disk, and an



HPT stage 2 disk.

**(j) Alternative Methods of Compliance (AMOCs)**

(1) The Manager, ECO Branch, FAA, has the authority to approve AMOCs for this AD, if requested using the procedures found in 14 CFR 39.19. In accordance with 14 CFR 39.19, send your request to your principal inspector or local Flight Standards District Office, as appropriate. If sending information directly to the manager of the certification office, send it to the attention of the person identified in paragraph (k)(1). You may email your request to: ANE-AD-AMOC@faa.gov.

(2) Before using any approved AMOC, notify your appropriate principal inspector, or lacking a principal inspector, the manager of the local flight standards district office/certificate holding district office.

**(k) Related Information**

(1) For more information about this AD, contact Wego Wang, Aviation Safety Engineer, ECO Branch, FAA, 1200 District Avenue, Burlington, MA 01803; phone: (781) 238-7134; fax: (781) 238-7199; email: Wego.Wang@faa.gov.

(2) Refer to European Union Aviation Safety Agency (EASA) AD 2018-0268, dated December 11, 2018, for more information. You may examine the EASA AD in the AD docket at <https://www.regulations.gov> by searching for and locating Docket No. FAA-2021-0257.

**(l) Material Incorporated by Reference**

(1) The Director of the Federal Register approved the incorporation by reference (IBR) of the service information listed in this paragraph under 5 U.S.C. 552(a) and 1 CFR part 51.

(2) You must use this service information as applicable to do the actions required by this AD, unless the AD specifies otherwise.

(i) Rolls-Royce Deutschland Ltd & Co KG Alert Non-Modification Service Bulletin SB-BR700-72-A900584, Revision 2, dated November 22, 2017.

(ii) [Reserved]

(3) For Rolls-Royce Deutschland service information identified in this AD, contact Rolls-Royce Deutschland Ltd & Co KG, Eschenweg 11, Dahlewitz, 15827

Blankenfelde-Mahlow, Germany; phone: +49 (0) 33 7086-4040; website:

<https://www.rolls-royce.com/contact-us.aspx>.

(4) You may view this service information at FAA, Airworthiness Products Section, Operational Safety Branch, 1200 District Avenue, Burlington, MA 01803. For information on the availability of this material at the FAA, call (781) 238-7759.

(5) You may view this service information that is incorporated by reference at the National Archives and Records Administration (NARA). For information on the availability of this material at NARA, email: [fr.inspection@nara.gov](mailto:fr.inspection@nara.gov), or go to: <https://www.archives.gov/federal-register/cfr/ibr-locations.html>.

Issued on October 8, 2021.

Lance T. Gant, Director,  
Compliance & Airworthiness Division,  
Aircraft Certification Service.

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